

Notice of Allowability

Application No.

10/750,622

Applicant(s)

DENISE ET AL.

Examiner

David C. Thomas

Art Unit

1637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 10 October 2007.
2. ☒ The allowed claim(s) is/are 29-33, 41, 42, 52-67, 72-74 and 76-101.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

David C. Thomas
11/17/08

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Jim Johnson on January 3, 2008 and a fax that was received on January 15, 2008.

The application has been amended as follows:

In the Claims:

Claims 1-28, 34-40, 43-51, 68-71 and 75 are now canceled, claims 52, 55, 72-74 and 76 are amended and claims 77-101 are newly added.

52. A kit for determining nucleotide occurrences or haplotype alleles of bovine single nucleotide polymorphisms (SNPs), comprising a combination of oligonucleotide probe, primer, primer pair, and a container for identifying the nucleotide occurrence of at least one SNP corresponding to position 300 of SEQ ID NO: 1, SEQ ID NO:2, SEQ ID NO:7, SEQ ID NO:2220, SEQ ID NO:2248, SEQ ID NO:2251, SEQ ID NO:4007, SEQ ID NO:4501, SEQ ID NO:4502, SEQ ID NO:4503, SEQ ID NO:64887, and SEQ ID NO:64888, wherein the oligonucleotide probe is complementary to at least 100 contiguous nucleotides of SEQ ID NO:4518, and wherein the SNP is associated with breed.

55. The kit of claim 52, wherein the kit comprises at least two probes, primers, and primer pairs for identifying the nucleotide occurrence of at least two SNPs that comprise a haplotype, and wherein the kit allows a determination of a haplotype allele that is associated with the breed.

72. A combination of two or more isolated nucleic acids each comprising at least 100 contiguous nucleotides of SEQ ID NO:4518.

73. The combination of claim 72, wherein at least one isolated nucleic acid comprises SEQ ID NO:4518.

74. The combination of claim 72, wherein at least one isolated nucleic acid comprises a detectable label at a position corresponding to position 300 of SEQ ID NO:4518.

76. The combination of claim 72, further comprising an oligonucleotide probe, primer, and primer pair corresponding to position 300 of the SNPs listed in Table 5, wherein the oligonucleotide probe comprises at least 100 contiguous nucleotides of SEQ ID NO:4518, and wherein the SNPs are predictive of breed determination of greater than about 50% of a specific breed.

77. A method of inferring the breed of a bovine subject comprising identifying in a nucleic acid sample from a bovine subject, an isolated polynucleotide comprising at least 100 contiguous nucleotides of SEQ ID NO:4518, wherein the polynucleotide is less than or equal to about 500,000 nucleotides in length, and wherein the isolated polynucleotide is associated with a breed, thereby inferring the breed of the bovine subject.

78. The method of claim 77, wherein the polynucleotide comprises the polynucleotide sequence of SEQ ID NO:4518.
79. The method of claim 77, wherein the polynucleotide further comprises a detectable label at a position corresponding to position 300 of SEQ ID NO:4518.
80. The method of claim 77, wherein the polynucleotide is complementary to at least 100 contiguous nucleotides of SEQ ID NO:4518.
81. The method of claim 77, wherein the polynucleotide comprises a detectable label.
82. A method of inferring the breed of a bovine subject comprising determining nucleotide occurrences of haplotype alleles of bovine SNPs using a kit for determining nucleotide occurrences or haplotype alleles of bovine SNPs, wherein the kit comprises a combination of oligonucleotide probe, primer, primer pair, and a container for identifying the nucleotide occurrence of at least one bovine single nucleotide polymorphism (SNP) corresponding to position 300 of SEQ ID NO: 1, SEQ ID NO:2, SEQ ID NO:7, SEQ ID NO:2220, SEQ ID NO:2248, SEQ ID NO:2251, SEQ ID NO:4007, SEQ ID NO:4501, SEQ ID NO:4502, SEQ ID NO:4503, SEQ ID NO:64887, and SEQ ID NO:64888, wherein the oligonucleotide probe is complementary at least 100 contiguous nucleotides of SEQ ID NO:4518, and wherein the SNP is associated with breed, thereby inferring the breed of the bovine subject.
83. The method of claim 82, wherein the kit comprises one or more detectable labels.
84. The method of claim 82, wherein the kit comprises a plurality of oligonucleotide

probes, primers, and primer pairs, for identifying the nucleotide occurrence of at least two of the SNPs.

85. The method of claim 82, wherein the kit comprises at least two probes, primers, and primer pairs for identifying the nucleotide occurrence of at least two SNPs that comprise a haplotype, and wherein the kit allows a determination of a haplotype allele that is associated with the breed.

86. A method of predicting breed in a bovine subject by identifying a combination of sequences in a sample from a bovine subject wherein the combination comprises at least SEQ ID NO:4518 and one or more sequences selected from SEQ ID NO: 1, SEQ ID NO:2, SEQ ID NO:7, SEQ ID NO:2220, SEQ ID NO:2248, SEQ ID NO:2251, SEQ ID NO:4007, SEQ ID NO:4501, SEQ ID NO:4502, SEQ ID NO:4503, SEQ ID NO:64887, or SEQ ID NO:64888, wherein the combination of two or more sequences is predictive of breed determination of greater than about 50% Angus breed.

87. The method of claim 86, wherein the combination comprises SEQ ID NO:4518 and SEQ ID NO:64887.

88. The method of claim 86, wherein the combination comprises SEQ ID NO:4518 and SEQ ID NO:4007.

89. The method of claim 86, wherein the combination comprises SEQ ID NO:4518 and SEQ ID NO:4501.

90. The method of claim 86, wherein the combination comprises SEQ ID NO:4518 and SEQ ID NO:64888.

91. The method of claim 86, wherein the combination comprises SEQ ID NO:4518

and SEQ ID NO:4502.

92. The method of claim 86, wherein the combination comprises SEQ ID NO:4518 and SEQ ID NO:4503.

93. The method of claim 86, wherein the combination comprises SEQ ID NO:4518, SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:7, SEQ ID NO:2220, SEQ ID NO:2248, SEQ ID NO:2251, SEQ ID NO:4007, SEQ ID NO:4501, SEQ ID NO:4502, SEQ ID NO:4503, SEQ ID NO:64887, and SEQ ID NO:64888.

94. The method of claim 86, wherein at least one sequence in the combination comprises a detectable label at a position corresponding to position 300.

95. The method of claim 94, wherein the sequence comprising the detectable label is SEQ ID NO:4518.

96. The combination of claim 86, wherein at least one sequence is less than or equal to about 500,000 nucleotides in length.

97. The combination of claim 86, further comprising an oligonucleotide probe, primer, and primer pair corresponding to position 300 of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:7, SEQ ID NO:2220, SEQ ID NO:2248, SEQ ID NO:2251, SEQ ID NO:4007, SEQ ID NO:4501, SEQ ID NO:4502, SEQ ID NO:4503, SEQ ID NO:64887, or SEQ ID NO:64888, wherein the oligonucleotide probe comprises at least 100 contiguous nucleotides of SEQ ID NO:4518, and wherein the SNPs are predictive of breed determination of greater than about 50% of a specific breed.

98. A combination of two or more isolated nucleic acids each comprising at least 100 contiguous nucleotides of SEQ ID NO: 4518.

99. The combination of claim 98, wherein at least one isolated nucleic acid comprises SEQ ID NO:4518.

100. The combination of claim 98, wherein at least one isolated nucleic acid further comprises a detectable label at a position corresponding to position 300 of SEQ ID NO:4518.

101. The combination of claim 98, further comprising an oligonucleotide probe, primer, and primer pair corresponding to position 300 of the SNPs listed in Table 5, wherein the oligonucleotide probe comprises at least 100 contiguous nucleotides of SEQ ID NO:4518, and wherein the SNPs are predictive of breed determination of greater than about 50% of a specific breed.

Reasons for Allowance

1. The following is an examiner's statement of reasons for allowance: In view of the amendments, the claimed invention is novel and unobvious over the prior art of Adams, Fodor, Wang and the New England Biolabs catalog. In particular, no prior art was found that teaches an isolated polynucleotide wherein the polynucleotide comprises at least 100 contiguous nucleotides of SEQ ID NO: 4518, wherein the polynucleotide is less than or equal to about 500,000 nucleotides in length. In addition, no prior art was found that teaches an isolated oligonucleotide that is complementary to at least 100 contiguous nucleotides of SEQ ID NO: 4518 or a kit comprising the oligonucleotide. Finally, no prior art was found that teaches a method for inferring bovine breed of a

bovine subject comprising identifying in a nucleic acid sample from the subject an isolated polynucleotide wherein the polynucleotide comprises at least 100 contiguous nucleotides of SEQ ID NO: 4518 wherein the polynucleotide is less than or equal to about 500,000 nucleotides in length.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany an issue fee. Such admissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David C. Thomas whose telephone number is 571-272-3320 and whose fax number is 571-273-3320. The examiner can normally be reached on 5 days, 9-5:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on 571-272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

Application/Control Number:
10/750,622
Art Unit: 1637

Page 9

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1/17/08


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